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10/531,125

04/13/2006

Hyun Soo Roh

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT

PAPER NUMBER

1793

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07/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|-----------------------------------|--|
| Office Action Summary | Application No. 10/531,125 | Applicant(s) ROH ET AL. | |
| | Examiner Michael A. Marcheschi | Art Unit 1793 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

In the instant specification and claims, applicant use “~” to define the ranges and the examiner is interpreting this to mean the same thing as “-“ (i.e. the values disclosed for the ranges are the two exact values defined and not approximates).

It is to be noted that a new rejection has been applied to clearly show that the claimed surfactant is known, thus this action is made non final.

Claims 1-2 and 4-6 are rejected under 35 U.S.C. 103(a) as obvious over Xu et al. (659) in view of Li (252) and/or Akahori et al. (206) and further in view of Maeno et al. (349).

Xu et al. teaches in the abstract and sections [0018]-[0032], a polishing composition comprising (1) colloidal silica having a primary particle size of 35 nm and a secondary particle size of 70 nm, (2) ammonia, (3) a cellulose based thickener (MW of 1,000,000), (4) a quaternary ammonium base and (5) water. The amounts of the individual components are defined based on a 20:1 or 40:1 dilution (with water). This reference teaches in section [0019], that a dispersant (i.e. surfactant) is used, however, is silent as to the use of the claimed specific surfactant (i.e. dispersant).

Li teaches in section [0057] benefits of using surfactants (nonionic) is polishing compositions.

Akahori et al. teaches in sections [0040], [0045] and [0047] that the inclusion of a dispersing agent (nonionic surfactant) in amounts of 0.01-2% are known for the benefit of optimizing the dispersibility of the abrasive particles in polishing compositions. A well known dispersing agent is polyoxyethylenealkyl amine (ether by nature).

Maeno et al. clearly teaches that sections [0024]-[0025] that polyoxyethylene alkyl (1-3 carbon atoms) amine (ether by nature) surfactants are known to include a compound that includes the specifically claimed material.

The use of a surfactant (in the claimed amount) in the composition according to the primary reference would have been obvious because it is extremely well known to add this component to polishing compositions in order to improve numerous aspects, including (1) to improve the stabilization of the slurry, (2) to improve wafer to wafer and within wafer uniformity, (3) to decrease defects, (4) to enhance post polish cleaning and (5) to improve the dispersibility of the abrasive particles. These benefits are clearly disclosed by Li in section [0057] and Akahori et al. in section [0047]. The benefits for using a surfactant in polishing composition, as defined above, clearly provide the necessary motivation for using this component in the composition according to the primary reference. In addition, the primary reference implies in section [0018] that the slurry is dispersed and one knows that improvements in dispersing of a slurry is accomplished using a dispersant (i.e. surfactant). The skilled artisan would have thus appreciated that any well known surfactant, such as, the one defined by Akahori et al. can be used.

With respect to the specific surfactant used, although not literally defined by Akahori et al., this reference teaches that a well known dispersing agent (surfactant) is polyoxyethylenealkyl

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amine (ether by nature) and thus provides the necessary motivation to use any and all of such polyoxyethylenealkyl amine surfactants known in the surfactant art, including the well known version of the claimed material, as is clearly outlined by Maeno et al. in sections [0024]-[0025]. In as much as this reference is not directed to polishing, this is immaterial because this reference has merely been used to establish that the claimed material is a well known surfactant (i.e. dispersant) irrespective of what the composition is that it is used for. In other words, Maeno et al. clearly teaches that the claimed surfactant is known and it is the examiners position that the skilled artisan would have clearly appreciated that this surfactant is not only applicable to detergent compositions but any compositions that polyoxyethylenealkyl amine (ether by nature) surfactants are known to be used in and since Akahori et al., which is directed to polishing, teaches that polyoxyethylenealkyl amine (ether by nature) surfactant are known to be used in the polishing art, the skilled artisan would have appreciated that any of such polyoxyethylenealkyl amine (ether by nature) surfactants can be applied. Finally, the interchangeability of known surfactants is clearly within the scope of the skilled artisan absence critical evidence.

With respect to the individual amounts of (1) colloidal silica, (2) ammonia, (3) cellulose and (4) a quaternary ammonium base, the primary reference defines the amounts based on a 20:1 or 40:1 dilution (with water). A reference can be used for all it teaches, thus the reference can be used for its teaching of a composition comprising the above components prior to dilution (i.e. intermediate composition). With this in mind, when the amounts of components are calculated prior to dilution, the reference teaches amounts for all the components which fall within the claimed values.

With respect to claim 5, since the composition is the same, it is the examiners position that the viscosity value of the composition will also be the same as that claimed absent evidence to the contrary.

With respect to the use of DI water, although not literally defined, the use of this type of water is well within the scope of the skilled artisan in order to minimize or eliminate contamination from the medium.

Applicant's arguments filed 6/18/08 have been fully considered but they are not persuasive.

In as much as a new rejection has been applied, the examiner will comment of applicants remarks that are pertinent to the above rejection.

Applicants argue that Xu et al. (A) discloses that a dispersant (i.e. surfactant) is optional and (B) discloses that the dispersion is done using stirring or ultrasonic dispersion and thus there would be no reason to include a dispersant in the composition of this reference. The examiner disagrees because (1) the statement that dispersing is optional does not means that no dispersing takes place (an optional limitation does not exclude the presence thereof), (2) the techniques defined by the reference are defined as examples and it is well known that a reference is not only limited the examples defined therein, thus it is the examiner position that one skilled in the art would have clearly appreciated that other known dispersing techniques, such as with the use of a dispersant, can be applied, (3) it is the examiners position that in the techniques defined by the reference, one skilled in the art would have appreciated that a dispersant is added to optimize the dispersion properties, (4) as defined above, one skilled in the art would have appreciated and

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found obvious the use of a surfactant (in the claimed amount) in the composition according to the primary reference because it is extremely well known to add this component to polishing compositions in order to improve numerous aspects, including (i) to improve the stabilization of the slurry, (ii) to improve wafer to wafer and within wafer uniformity, (iii) to decrease defects, (iv) to enhance post polish cleaning and (v) to improve the dispersibility of the abrasive particles (these benefits are clearly disclosed by Li in section [0057] and Akahori et al. in section [0047] and said benefits for using a surfactant in polishing compositions, as defined above, clearly provide the necessary motivation for using this component in the composition according to the primary reference) and (5) Xu et al. clearly teaches in line 6 of section [0019] that a dispersant is used.

In view of point (5) above, applicants arguments that this reference does not suggest the use of a dispersant (surfactant) are not persuasive.

With respect to point (3) above, applicants provide no evidence that in the above techniques, no dispersant whatsoever is used.

With respect to Li et al. applicants appear to argue that this reference teaches the benefits associated with the use of an ionic surfactant and not a nonionic surfactant. This is not persuasive because the reference clearly teaches in section [0057] that the surfactants are nonionic and although ionics are more effective, a reference can be used for all it realistically teaches and this reference does teach the benefits of using all nonionic surfactants (see line 4).

With respect to Akahori et al. applicants would appear to be arguing that since this reference is directed to ceria abrasive slurries and the other references are directed to silica abrasive slurries, the use of surfactants for one type of slurry (i.e. ceria) would not be applicable

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to the other type of slurry (silica). This is not persuasive because applicants provide no evidence or clear reasoning that would suggest to one skilled in the art that surfactants used for ceria slurries cannot be used for silica slurries and visa versa. The examiner acknowledges the different properties (i.e. hardness) associated with the individual abrasives, however, it is the examiners position that a surfactant for one type of abrasive slurry can also be used for another type of abrasive slurry, as would be apparent from section [0057] coupled with section [0074] of Li et al. which discloses that the nonionic surfactants are known to be used with either silica abrasive slurries or ceria abrasive slurries. The function of a surfactant is to improve the dispersion of the slurries and it is the examiners position that it is not dependent upon the abrasive used (i.e. surfactants can be used interchangeably in ceria or silica slurries and applicants provide no evidence to the contrary).

With respect to the combination, applicants specifically present arguments against the specific surfactant claimed. Since a new rejection addressing this aspect has been provided, no further comment is deemed necessary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/Michael A Marcheschi/
Primary Examiner, Art Unit 1793